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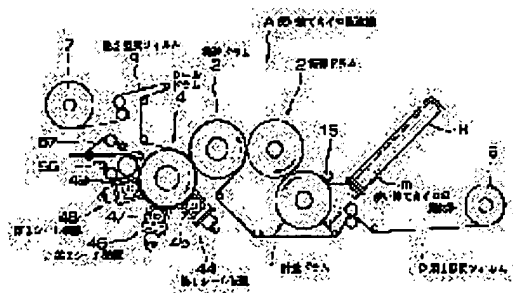
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(54) MANUFACTURING MACHINE FOR DISPOSABLE BODY WARMER

(57)Abstract:

PURPOSE: To provide a manufacturing machine for disposable body warmers such that raw materials for disposable body warmers are automatically measured, one portion for one warmer by one portion for one warmer, for wrapping.

CONSTITUTION: A measuring drum 1, transition drum 2, transfer drum 3, and seal drum 4 are provided in series from the inlet side to the outlet side, and the drum 1 includes a raw material measuring means for measuring raw material (m), raw material holding means for holding the raw material (m), and holding force cutoff means for transferring the material (m). Further the drum 2 includes a raw material holding means for holding the raw material (m) and a holding force cutoff means for transferring the material (m), the drum 3 includes a raw material holding means for holding the material (m) in such a condition that the raw material (m) is placed on a film (p), and the drum 4 includes a raw material holding means wherein the raw material (m) is sandwiched between the films (p, q) and seal devices 44, 46, 48 for heat sealing the films (p, q).



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the manufacture approach of the package object which used magnetism and a suction force in more detail, for example, the heating element which generates heat under existence of air, and a saccate deoxidant about the manufacture approach of package object ** which comes to contain the constituent (henceforth a magnetic powder content constituent) containing magnetic-substance powder into a bag.

[0002]

[Description of the Prior Art] As a typical thing of a magnetic powder content constituent, the constituent which consists of a metal powder, water, a water retention agent, and a pro oxidant is mentioned, and this constituent is used as an exothermic agent and a deoxidant using the reaction of magnetic powder and oxygen. In recent years, the heating element which comes to contain an exothermic agent into a permeability bag has spread widely noting that it should be in throwing away. The approach indicated by JP,4-2342,A as a manufacturing method using magnetism of a heating element is well-known. That is, this well-known approach is the manufacture approach of the heating element which an exothermic agent is made to adhere to one magnet sheet, and carries out a magnetism imprint on the surface of an wrapping material, holds using other magnet sheets with which that affix was prepared in the wrapping material based on the magnetism replica method performed using the magnet sheet of two sheets, and puts and carries out the seal of the wrapping material of one more sheet.

[0003]

[Problem(s) to be Solved by the Invention] However, in case the seal of the wrapping material of one more sheet is put and carried out to this well-known approach at the time of high-speed production, immobilization of an wrapping material becomes unstable, and since meandering of an wrapping material arises or it is easy to generate a wrinkle in the formed seal section, a difficulty is in the stability of high-speed operation.

[0004]

[Means for Solving the Problem] In covering a magnetic powder content constituent with the wrapping material of two sheets, carrying out the seal of both this wrapping material, as a result of inquiring wholeheartedly that said technical problem should be solved, and manufacturing a package object, when this invention person etc. did a seal, he reached [that a package object can be manufactured stably at high speed and] a header and this invention by using magnetism and a suction force.

[0005] That is, this invention offers the manufacture approach of the package object characterized by to put another wrapping material on a magnetic powder content constituent, and to carry out the seal of both the wrapping materials, attracting the wrapping material which laid the magnetic powder content constituent in the manufacture approach of the package object which comes to contain a magnetic powder content constituent into the permeability bag which consists of an wrapping material of two sheets, and holding a magnetic powder content constituent magnetically on the front face of this

wrapping material.

[0006] As equipment (henceforth the magnetic powder content constituent supporting structure) used for attracting the wrapping material with which the magnetic powder content constituent was laid, and holding this magnetic powder content constituent magnetically on the front face of this wrapping material In order to enable high-speed production of a package object, the rotational-structure object with which the suction room (namely, decompression chamber) which the magnet which has suction opening is arranged at intervals of predetermined on a perimeter side, and can be open for free passage with suction opening was installed inside is desirable. Furthermore, the rotational-structure object which installed inside suction opening which prepared the crevice at intervals of predetermined on the perimeter side, and formed the magnet in the pars basilaris ossis occipitalis or inferior surface of tongue of a crevice as the desirable magnetic powder content constituent supporting structure, used the pars basilaris ossis occipitalis of a crevice itself as the magnet, and was prepared in the crevice thru/or the magnet, and the suction room which can be open for free passage is mentioned. If the latter rotational-structure object is used, since a cavity will be formed in an wrapping material in a crevice, compared with the former rotational-structure object, a bite lump of the magnetic powder content constituent to the seal section in the wrapping material seal process of package object manufacture decreases, and the seal condition of the seal section will become good. In addition, a suction force can adjust the degree of the cavity of said cavity.

[0007] The device in which it may be made for the magnetism by which the magnetic powder content constituent supporting structure has such the magnetic powder content constituent supporting structure in the contact section with the following magnetic powder content constituent feeder at least to become larger than the magnetism which the following magnetic powder content constituent feeder has, Moreover, in order to make the package object manufactured in the magnetic powder content constituent supporting structure secede from this equipment easily, it is desirable to have the device in which ** can be given to the device or package object which it falls [object] and extinguishes the magnetism and/or suction force after package object manufacture. The increment in magnetism, a fall, or disappearance will be easily attained, if the electromagnet to which magnetism may be changed as a magnet is used. The pressurization to a fall, disappearance, or the package object of a suction force is attained by installing a non-drawing in room (an ordinary pressure room or pressurized room) inside with a suction room.

[0008] There is the approach of supplying and laying in the front face of an wrapping material from a magnetic powder content constituent feeder as an approach of laying a magnetic powder content constituent in an wrapping material. Or it prepared the crevice at intervals of predetermined as a magnetic powder content constituent feeder on the rotational-structure object which formed the hopper and the magnet, and the perimeter side and formed the magnet in the pars basilaris ossis occipitalis or inferior surface of tongue of a crevice, the rotational-structure object which used the pars basilaris ossis occipitalis of a crevice itself as the magnet is mentioned.

[0009] moreover, as an option which lays a magnetic powder content constituent in an wrapping material The front face of the magnetic powder content constituent adhering to the magnetic powder content constituent feeder which consists of a rotational-structure object which used the pars basilaris ossis occipitalis of a crevice itself as the magnet or it prepared the crevice at intervals of predetermined on the perimeter side and formed the magnet in the pars basilaris ossis occipitalis or inferior surface of tongue of a crevice It covers with an wrapping material and the method of transporting and laying an wrapping material so that an wrapping material may become subsequently to the inferior surface of tongue of a magnetic powder content constituent is mentioned.

[0010] In order to supply the magnetic powder content constituent of the specified quantity to an wrapping material certainly, as for the magnetic powder content constituent feeder which consists of these rotational-structure objects, it is desirable to set into the part which touches the magnetic powder content constituent supporting structure at least, and to have the device which the magnetism of a magnetic powder content constituent feeder is declined extinguished, or covers it.

[0011] A fall or disappearance of magnetism will be easily attained, if the electromagnet to which

magnetism may be changed as a magnet is used. Moreover, electric shielding of magnetism is attained by preparing the endless sheet which rotates in a magnetic powder content constituent feeder and this direction, contacting each front face of inserting a magnetism shield among both equipments, a magnetism shield, and a magnetic powder content constituent feeder so that the edge of a magnetism shield may be arranged at the part which each rotational-structure object of a magnetic powder content constituent feeder and the magnetic powder content constituent supporting structure touches. That is, a magnetic powder content constituent is made to adhere to the magnet of a magnetic powder content constituent feeder through an endless sheet, is conveyed along the front face of a magnetic powder content constituent feeder with an endless sheet, and it leads to the edge of a magnetism shield. Thus, since the magnetism of the magnet of a magnetic powder content constituent feeder which had adhered this is covered with a magnetism shield and the magnetism of the magnet of the magnetic powder content constituent supporting structure acts on a magnetic powder content constituent, the magnetic powder content constituent led to the edge of a magnetism shield is held at the magnetic powder content constituent supporting structure.

[0012] Even if it is a belt-like rotational-structure object, it does not interfere, but in order to make a magnet or a suction room easy to prepare, a drum-like rotational-structure object likes the rotational-structure object of the magnetic powder content constituent feeder mentioned above and the magnetic powder content constituent supporting structure, and it is usually used. The magnet used for a magnetic powder content constituent feeder and the magnetic powder content constituent supporting structure can also use a permanent magnet in addition to an electromagnet. Moreover, especially the crevice, magnet, and suction room that are established in these rotational-structure objects are not limited about those configurations or structures. As long as it is required, the cleaning roller for pressing down and cleaning the sealing surface of a roller, a scraper and/or a crevice, or an wrapping material may be attached to a magnetic powder content constituent feeder or the magnetic powder content constituent supporting structure.

[0013] next -- as the magnetic powder content constituent of this invention -- (**) -- magnetic magnetism powder, such as iron powder, and (**) -- the constituent which uses water retention agents, such as oxidation assistants, such as water, a halogenation (Ha) magnetism salt, or a sulfate, and (d) wood flour, a leech stone, activated carbon, and an absorptivity polymer, as a principal component, and the constituent which added the surfactant as the binder or sinking-in assistant as the mineral as a hydrogen generating inhibitor and a combination assistant etc. to the component of these (b)s - (d) further are mentioned. Preferably, the constituent which consists of iron powder, water, a halogenation magnetism salt, and activated carbon at least is used as an exothermic agent or a deoxidant.

[0014] Although the wrapping material of two sheets which carries out the covering seal of this and is used as a package object is chosen from a non-permeability wrapping material and a permeability wrapping material when a magnetic powder content constituent is an exothermic agent or a deoxidant, at least one sheet consists of permeability wrapping materials.

[0015] a permeability wrapping material -- (a) nonwoven fabrics and (b) porosity sheets (a trade name NF sheet (Tokuyama Soda make) --) A laminating sheet with porosity sheets, such as trade name cel pore (Sekisui Chemical make) and trade name BURESURON (NITTO DENKO make), and a nonwoven fabric, What punched mechanically the laminating sheet which laminated plastic film in the permeability sheet (trade name Tyvek (Du Pont make)) (c) nonwoven fabric which carries out the laminating of the polyethylene fiber and is built by carrying out heating pressurization with the cutting-edge type etc., Or what laminated the plastic film which prepared the air hole beforehand is applied to the (d) nonwoven fabric or a porosity sheet.

[0016] Although an inside may be the compound wrapping material of use conventionally which consisted of polyethylene films etc., a non-permeability wrapping material is used for the external surface of this wrapping material by what formed the binder layer and mold release wrapping material for heating element wearing maintenance, liking it on it, when a package object is a heating element. Moreover, if seal reinforcement is one of the things of the application which is not demanded so much, what prepared the adhesives layer in the inside of this wrapping material may be used.

[0017] The approach which combined the approach of heat sealing, the approach by adhesives, and these both as an approach of carrying out the seal of both the wrapping materials is mentioned.

[0018]

[Example] Next, a drawing explains the desirable example of this invention approach about the case where an exothermic agent is used as a magnetic powder content constituent. Drawing 1 is the abbreviation sectional view showing the manufacturing method of the heating element at the time of using the hopper 2 in which a N2 seal is possible as a magnetic powder content constituent feeder in the manufacturing method of this invention, and using drum-like rotational-structure object A3 as the magnetic powder content constituent supporting structure.

[0019] Drum-like rotational-structure object A3 has two or more crevices 5 which are adapted for the configuration of a heating element at intervals of predetermined on a perimeter side. It is what enabled heat sealing of an wrapping material on the front face of the height which forms a crevice 5, formed a magnet 6 (permanent magnet) and the suction opening 13 in the pars basilaris ossis occipitalis of a crevice 5, and installed inside the suction room 12 and the non-drawing in room 14 which were fixed, and a crevice 5 is the rotational-structure object which is circumscribed to the suction room 12 and the non-drawing in room 14, and rotates. Therefore, if drum-like rotational-structure object A3 rotates, the suction opening 13 will be open for free passage with either the suction room 12 and the non-drawing in room 14 with a rotation location.

[0020] First, an wrapping material A10 is supplied to the crevice 5 of drum-like rotational-structure object A3 rotated clockwise, and a cavity 20 is made to form in an wrapping material A10 by the suction effect of suction 12. Subsequently, the exothermic agent 1 of the specified quantity is supplied and laid in the cavity 20 of an wrapping material A from a hopper 2, it holds in the configuration of a request of an exothermic agent 1 with a magnet 6, and the front face of an exothermic agent 1 is prepared with the presser-foot roller 9, an wrapping material B11 is put, a seal is carried out with the seal die roll 15, and the heating element sheet 18 is manufactured. And after this heating element sheet arrives at the non-drawing in room 14 and secedes from drum-like rotational-structure object A3, it is cut with the cut roller 16 and obtains the separated heating element 19. The separated heating element 19 is transported using the hole vacancy migration belt 17 (the aspirator was built in it is the same as that of a thing and the following). In addition, a cut roller can also make a cut roller adjoin the magnetic powder content constituent supporting structure, in order to obtain the heating element which cut the manufactured heating element sheet immediately and was separated.

[0021] Drawing 2 is the abbreviation sectional view showing the manufacturing method of the heating element at the time of using the hopper in which a N2 seal is possible as a magnetic powder content constituent feeder, and drum-like rotational-structure object B4 in the manufacturing method of this invention, and using drum-like rotational-structure object A3 as the magnetic powder content constituent supporting structure.

[0022] Drum-like rotational-structure object A3 is the same as that of drum-like rotational-structure object A3 shown in drawing 1 except having changed the range of the suction room 12 of the interior equipment in drawing 1 , and the non-drawing in room 14. Drum-like rotational-structure object B4 is the rotational-structure object which installed inside the magnetization room 7 and the demagnetization room 8 which have two or more crevices 5 which are adapted for the configuration of a heating element at intervals of predetermined, formed the magnet 6 (electromagnet) in the pars basilaris ossis occipitalis of a crevice 5, and were further fixed on the perimeter side. The exothermic agent 1 of the specified quantity is supplied to the crevice 5 of drum-like rotational-structure object B4 rotated counterclockwise from a hopper 2, the front face of the exothermic agent 1 held with the magnet 6 is pressed down, and it prepares with a roller 9.

[0023] On the other hand, drum-like rotational-structure object A3 rotates clockwise, forming a cavity 20 in the wrapping material A10 supplied to the crevice 5 by the suction effect of the suction room 12. In the part to which drum-like rotational-structure object A3 touches drum-like rotational-structure object B4, the exothermic agent 1 which the crevice 5 of drum-like rotational-structure object B4 holds is made to arrive at the demagnetization room 8, and it demagnetizes, it lays in the cavity 20 of said

wrapping material A10 with the magnet 6 of drum-like rotational-structure object A3, and holds in a desired configuration, and an wrapping material B11 is put, a seal is carried out with the seal die roll 15, and the heating element sheet 18 is manufactured. And after this heating element sheet arrives at the non-drawing in room 14 and secedes from drum-like rotational-structure object A3, it is cut with the cut roller 16 and obtains the separated heating element 19. The separated heating element 19 is transported using the hole vacancy migration belt 17.

[0024] Drawing 3 is the abbreviation sectional view showing the manufacturing method of the heating element performed using the same equipment as drawing 2 except having changed the supply location of an wrapping material A in drawing 2.

[0025] The exothermic agent 1 of the specified quantity is supplied to the crevice 5 of drum-like rotational-structure object B4 rotated counterclockwise from a hopper 2, and the front face of the exothermic agent 1 held with the magnet 6 is pressed down, it prepares with a roller 9, and an wrapping material A10 is supplied and put. In the part which touches drum-like rotational-structure object A3 which drum-like rotational-structure object B4 rotates clockwise The exothermic agent 1 which the crevice 5 of drum-like rotational-structure object B4 holds is made to arrive at the demagnetization room 8, and it demagnetizes. With the suction effect and magnet 6 of drum-like rotational-structure object A3 An exothermic agent 1 and an wrapping material A10 are moved to the crevice 5 as for which drum-like rotational-structure object A3 carries out phase correspondence, an exothermic agent 1 is laid in an wrapping material A10, and it holds in a desired configuration, and an wrapping material B11 is put, a seal is carried out with the seal die roll 15, and the heating element sheet 18 is manufactured. And after this heating element sheet arrives at the non-drawing in room 14 and secedes from drum-like rotational-structure object A3, it is cut with the cut roller 16 and obtains the separated heating element 19. The separated heating element 19 is transported using the hole vacancy migration belt 17.

[0026]

[Effect of the Invention] Since another wrapping material is put on a magnetic powder content constituent and the seal of both the wrapping materials is carried out, attracting the wrapping material which laid the magnetic powder content constituent, and holding a magnetic powder content constituent magnetically on the front face of this wrapping material according to the manufacture approach of this invention Also under the conditions in high-speed production, meandering of an wrapping material and the formation of wrinkles of the seal section in a seal process can be prevented, operation is stabilized, the rate of a defective decreases sharply, ** people-ization also becomes possible and its productivity of a package object improves compared with the conventional approach.

[Translation done.]